



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|--------------------------|---------------------|------------------|
| 10/047,521 | 11/13/2001 | Anthony William Worsdell | DAVIDK 3.9-002 CONT | 5149 |
| 530 | 7590 | 06/01/2004 | EXAMINER | |
| LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090 | | | PAYNE, SHARON E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2875 | |

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|------------------------------|-----------------|-----------------|
| | 10/047,521 | WORSDELL ET AL. |
| Examiner | Art Unit | |
| Sharon E. Payne | 2875 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 15 March 2004.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-5,7-22 and 24-63 is/are pending in the application.
4a) Of the above claim(s) 32-46 and 48-62 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-5,7-18,21,24-31,47 and 63 is/are rejected.

7) Claim(s) 19 and 20 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 March 2004 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4-5, 7, 8, 10, 12, 25, 26, 30, 31, 47 and 63 are rejected under 35 U.S.C. 102(e) as being anticipated by Chapman et al. (U.S. Patent 5,984,494).

Regarding claim 1, Chapman et al. discloses a housing (Fig. 1) adapted to be mounted on the exterior of the aircraft (abstract), a transparent window (reference number 10) protecting an opening in the housing (Fig. 1), a light source comprising an array of LEDs (column 3, lines 60-62) disposed in the housing (Figs. 1 and 8) and an optical unit (reference number 34) also disposed in the housing behind the window and fixed in front of the LEDs (Figs. 1 and 8), the optical unit being adapted to collect the light emitted from the LEDs and propagate fractions of

the collected light in accordance with a predetermined non-uniform angular distribution that varies in intensity over a range of angles (column 5, lines 60-62).

Concerning claim 4, Chapman et al. discloses the optical unit (reference number 34) being positioned with respect to the LED array such that substantially all of the light emitted from the LEDs is incident upon the optical unit (Fig. 8). (The group of lenses, reference number 34, is considered to be the optical unit.)

Regarding claim 5, Chapman et al. discloses the optical unit employing refractive optics (lenses, reference number 34).

Concerning claim 7, Chapman et al. discloses the optical unit including a first optical structure comprising a plurality of lenses (reference number 34) adapted to collect light from the LEDs incident on the optical unit (Fig. 8).

Regarding claim 8, Chapman et al. discloses each one of the LEDs being associated with a respective one of the plurality of lenses (reference number 34, Fig. 8).

Concerning claim 10, Chapman et al. discloses each lens of the plurality of lenses is positioned immediately in front of the LED with which the lens is associated (Fig. 8).

Regarding claim 12, Chapman et al. discloses each lens of the plurality of lenses being spherical (Fig. 9).

Concerning claim 25, Chapman et al. discloses a spacer adapted to position the optical unit at a selected distance from the LEDs (Fig. 8). (The bottom portion of the lenses acts as a spacer.)

Regarding claim 26, Chapman et al. discloses the spacer being formed integrally with the optical unit (Fig. 9).

Concerning claim 30, Chapman et al. discloses one or more IR LEDs (abstract).

Regarding claim 31, Chapman et al. discloses an optical structure adapted to collect the light emitted from the LEDs (column 5, lines 60-62) and propagate fractions of the collected light in accordance with a predetermined non-uniform angular distribution that varies in intensity over a range of angles (column 5, lines 60-62).

Concerning claim 47 Chapman et al. discloses an array of LEDs (abstract), an optical unit (lenses, reference number 34) having an optical structure adapted to collect light emitted from the LEDs and propagate fractions of the collected light in accordance with a predetermined non-uniform angular distribution that varies in intensity over a range of angles (column 5, lines 60-62), and spacing means for holding the optical unit at a fixed distance from the LEDs (Fig. 9). The sides of the smaller lenses (the smaller domes in Fig. 9) constitute spacing means to keep the top of the lens, part of the optical unit, at a fixed distance from the LED.

Regarding claim 63, Chapman et al. discloses one or more IR LEDs (abstract).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al in view of Meggs (U.S. Patent 4,521,835).

Concerning claim 2, Chapman et al. does not disclose the type of optical unit disclosed in the claim. Meggs et al. discloses an optical unit adapted to redirect, in a substantially forward direction relative to the orientation of an aircraft to which the warning light is affixed (column 4, lines 1-10), at least some of the light which otherwise would be emitted from the LEDs in a substantially lateral direction relative to the orientation of the aircraft (column 4, lines 10-20). The portion of the claim starting with "wherein" in line 2 and ending with "navigation warning light" in line 3 constitutes use language, which is not given patentable weight. See M.P.E.P. 2112. (A navigation warning light is merely another use for a light; the structure is still that of a light.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the optical unit of Chapman et al. with the optical unit of Meggs et al. to redirect the light toward the front of the aircraft.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Bodem (U.S. Patent 5,388,035).

Regarding claim 3, Chapman et al. does not disclose an optical unit that is adapted to redirect light in a substantially horizontal direction from a vertical direction. Bodem discloses an optical unit that is adapted to redirect, in a substantially horizontal direction relative to the orientation of an aircraft to which the warning light is affixed, at least some of the light which otherwise would be emitted from the LEDs in a substantially vertical direction relative to the orientation of the aircraft (abstract).

The portion of the claim starting with "wherein" in line 1 and ending with "anti-collision light" in line 2 constitutes use language, which is not given patentable weight. See M.P.E.P. 2112. (An anti-collision light is merely another use for a light; the structure is still that of a light.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the optical unit of Bodem in the apparatus of Chapman et al. for spreading the light horizontally.

6. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Roney (U.S. Patent 5,528,474).

Concerning claim 9, Chapman et al. does not disclose the LED and lens arrangement as described in the claim.

Roney et al. discloses the array of LEDs comprising a plurality of rows of LEDs (Fig. 1) and each of the rows is associated with a respective one of the plurality of lenses (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the lens arrangement of Roney et al. in the apparatus of Chapman et al. to conduct light from the LEDs effectively.

Regarding claim 11, Chapman et al. does not disclose the lens arrangement described in the claim.

Roney et al. discloses each lens of the plurality of lenses being positioned immediately in front of the row of LEDs with which the lens is associated (Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the lens arrangement of Roney et al. in the apparatus of Chapman et al. to conduct light from the LEDs effectively.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Roney et al. as applied to claim 9 above, and further in view of DE 4128995 A1 (hereinafter "Decker").

Regarding claim 13, Chapman et al. does not disclose aspherical lenses. Decker discloses the plurality of lenses being aspherical (reference character P).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the aspherical lenses of Decker in the apparatus of Chapman et al. to distribute the light as desired.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable Chapman et al. in view of GB 2,295,274 A (hereinafter "Bernard").

Regarding claim 14, Chapman et al. does not disclose total internal reflection structures.

Bernard discloses an optical unit comprising total internal reflection structures (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the total internal reflection structures of Bernard in the apparatus of Chapman et al. for distributing the light as desired.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al in view of Roney and Decker as applied to claim 13 above, and further in view of Bernard.

Regarding claim 15, Chapman et al. does not disclose total internal reflection structures. Bernard discloses an optical unit comprising total internal reflection structures (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the total internal reflection structures of Bernard in the apparatus of Chapman et al. for distributing the light as desired.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Serizawa et al. (U.S. Patent 4,733,335).

Regarding claim 16, Chapman does not disclose a second optical structure. Serizawa et al. discloses a second optical structure (reference number 126) adapted to transmit the collected light from the optical unit (Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the second optical structure of Serizawa in the apparatus of Chapman et al. to further direct light in the direction desired.

11. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Serizawa et al. as applied to claim 16 above, and further in view of Kondo et al. (U.S. Patent 6,296,376 B1).

Regarding claim 17, Chapman et al. does not disclose a second optical structure with one or more prisms. Kondo et al. discloses a second optical structure comprising one or more prisms adapted to propagate the collected light in accordance with the predetermined angular distribution (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the optical structure of Kondo et al. in the apparatus of Chapman et al. for distributing light as desired.

Regarding claim 18, Chapman et al. does not disclose a plurality of prisms. Kondo et al. discloses a plurality of prisms extending along one or both of the length and width of the LED array to form a series of ridges on an outer surface of the optical unit (Fig. 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the prisms of Kondo et al. in the apparatus of Chapman et al. to distribute the light as desired.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view Meggs as applied to claim 2 above, and further in view of Albou (U.S. Patent 6,273,591).

Regarding claim 21, Chapman et al. does not disclose an optical unit with convex lenses on one face and prisms on another. Albou discloses an optical unit comprising a transparent body having a first face provided with a first optical structure (Fig. 1) and a second face provided with a second optical structure (cells, reference character C), the second face being opposed to

the first face (Fig. 1), the first optical structure being in the form of a plurality of convex lenses (Fig. 1) and the second optical structure being in the form of one or more prisms (Fig. 1), and the convex lenses being positioned with respect to the one or more prisms such that light from the optical unit is propagated in accordance with the predetermined angular distribution (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the optical unit in Chapman et al. with the optical unit in Albou to distribute light as desired.

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view Bodem as applied to claim 3 above, and further in view of Futami et al. (U.S. Patent 6,386,743).

Regarding claim 22, Chapman et al. discloses an optical unit comprising a transparent body having first and second opposed faces (Fig. 8). Serizawa et al. does not disclose aspherical cylindrical lenses. Futami et al. discloses an optical unit comprising a transparent body having first and second opposed faces (Fig. 13), the first face being provided with a plurality of aspherical cylindrical lenses (Fig. 1, column 9 in line 63 to column 10 in line 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the optical unit of Chapman et al. with the optical unit of Futami et al. to distribute the light as desired.

14. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Serizawa et al.

Regarding claim 24, Chapman et al. does not specifically disclose a molded, plastic element. Serizawa et al. discloses the optical unit as a molded, plastic element (column 4, lines 44-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plastic optical element of Serizawa et al. in the apparatus of Chapman et al. to protect the LED.

15. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. in view of Roney et al.

Concerning claim 27, Chapman et al. does not disclose a potting compound. Roney et al. discloses the LEDs being encapsulated in a potting compound (reference number 14) and the potting compound is formed at a predetermined depth to provide the spacer (Fig. 2). The potting compound and the ends of the lenses both function as spacers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the potting compound of Roney et al. in the apparatus of Chapman et al. to support the LEDs.

16. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al.

Regarding claim 28, Chapman et al. does not specifically disclose providing a gap between the LEDs and the optical unit of up to 5 mm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the spacing between the optical unit and the LEDs in the Chapman et al. reference to catch as much light in the optical element as possible.

Regarding claim 29, Chapman et al. does not specifically disclose providing a gap between the LEDs and the optical unit that is between 0.3 mm and 2mm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the spacing between the optical unit and the LEDs in the Chapman et al. reference to catch as much light in the optical element as possible.

Allowable Subject Matter

17. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to disclose the following features:

- 1) a warning light with the strings of LEDs and prisms positioned orthogonally with respect to each other; and
- 2) a warning light with a plurality of strings of LEDs connected in parallel with other strings with the prisms positioned to extend across the LEDs of a plurality of the strings.

Response to Arguments

19. Applicant's arguments with respect to claims 1-5, 7-18, 21-22, 24-31 and 47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Payne whose telephone number is (571) 272-2379. The examiner can normally be reached on regular business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sep


Sharon Payne
Patent Examiner
Technology Center 2800